OBITUARY NOTICES OF FELLOWS DECEASED

Between 30th Nov. 1863 and 30th Nov. 1864.

Capt. William Allen entered the Navy in 1805. At the passage of the Dardanelles, by Sir John Duckworth, he served on board 'The Standard;' and afterwards took part in the expedition against Java. He was engaged in the Niger exploration under Capt. Trotter in 1841, and in 1848 published an account of the Voyage, in two volumes. In 1855 he brought out another work on the "Dead Sea, and the Overland Communication with the East," in which he recommended the cutting of a canal from the Mediterranean to the Dead Sea. He was an active member of the Royal Geographical Society, and was elected into the Royal Society in 1844. He died in January, aged seventy-one.

In the Rev. Dr. William Cureton, Canon of Westminster, ancient literature has lost one of the ablest of Syriac scholars. His 'Corpus Ignatianum,' an edition of an ancient Syriac version of the Epistles of St. Ignatius, with commentaries, published in 1845, established his reputation as an Orientalist, and became the occasion of a spirited controversy which was carried on for some years among students of ancient texts. This was followed by an edition of a palimpsest of portions of Homer, discovered in a convent in the Levant, and in 1855 by 'Spicilegium Syriacum,' in both of which Dr. Cureton exhibited profound and accurate scholarship. He was continuing his researches into old Syriac versions of St. Matthew's Gospel at the time of his decease; and, considering how valuable were the services he rendered to that department of literature, the accident by which those services were interrupted is the more to be deplored.

Dr. Cureton was born in 1808. About two years before his death, which took place at Westbury, Shropshire, on June 17, 1864, he sustained so severe a shock from an accident to a railway-train in which he was travelling, that his health remained permanently impaired. He was educated at Christ Church, Oxford, and was ordained a priest in 1834; in 1847 he was appointed Chaplain in Ordinary to the Queen, and in 1849 was preferred to a canonry of Westminster, and therewith to the rectorship of St. Margaret's. Besides these ecclesiastical employments, he held for a short time the place of Sublibrarian to the Bodleian Library; in 1837 he became Assistant-keeper of the MSS. in the British Museum, and was afterwards appointed one of the Trustees of the Museum on the part of the Crown. He was elected a Fellow of the Royal Society in 1838.

Joseph Henry Green was born in London, on the 1st of November, 1791, and died at Hadley, Middlesex, on the 13th of December, 1863.

Mr. Green's father was a merchant of high standing in the City of London, and his mother was a sister of Mr. Cline, the eminent surgeon. His school education was begun in this country, but completed in Germany, where, accompanied by his mother, he spent three years, chiefly in Hanover.

At the age of eighteen he was apprenticed to his uncle, Mr. Cline, and entered on the study of medicine at St. Thomas's Hospital, of which Mr. Cline was surgeon. In 1813 he married Miss Anne Eliza Hammond. This lady, who survives him, was the daughter of Mr. Hammond, surgeon at Southgate, and sister of an early friend and fellow student.

In 1815 Mr. Green became a member of the College of Surgeons, and was soon afterwards appointed Demonstrator of Anatomy at St. Thomas's Hospital. While in this office he published a 'Dissector's Manual,' which bore advantageous comparison with the books of the same kind then in use. In the meantime Mr. Cline had retired from St. Thomas's, and was succeeded by his son Mr. Henry Cline, on whose early death, in 1820, Mr. Green was appointed Surgeon to that Hospital, and Lecturer on Surgery in the Medical School, in conjunction with Sir Astley Cooper, who withdrew from the joint office in 1825.

The advantageous position in which Mr. Green was now placed, and his own merit, speedily gained for him the confidence of his profession and the public. In 1824 he was appointed Professor of Anatomy to the Royal College of Surgeons; in 1825 he was elected a Fellow of the Royal Society (in later years he served on the Council). Also in 1825 he received the appointment of Professor of Anatomy to the Royal Academy, and in the latter part of that year delivered the first of a long succession of annual courses on Anatomy in its relation to the Fine Arts. Ere now, too, he had acquired a considerable and increasing share in the private practice of his profession.

Respecting the Lectures at the College of Surgeons, which formed one comprehensive course distributed over four years, Professor Owen, who heard them delivered, thus writes to Mr. Simon* :—"For the first time in England the comparative anatomy of the whole animal kingdom was described, and illustrated by such a series of enlarged and coloured diagrams as had never before been seen. The vast array of facts was linked by reference to the underlying Unity, as it had been advocated by Oken and Carus. The Comparative Anatomy of the latter was the text-book of the Course. . . . . Green illustrated, in his grand course, Carus rather than Hunter; the dawning philosophy of Anatomy in Germany, rather than the teleology which Abernethy and Carlisle had previously given as Hunterian, not knowing their master."

Of Mr. Green's lectures at the Royal Academy (where he retained his professorship till 1852), Mr. Simon, who attended several of the courses, thus expresses himself:—"His teaching at the Royal Academy, like all his teaching, was characterized by a very deep-going and comprehensive treatment of his subject. He recognized, of course, that the details of anatomy

* The facts, and in some places the language, of this notice have been taken from a biographical memoir prefixed to Mr. Green's posthumous work (to be afterwards referred to) by its editor, John Simon, Esq., F.R.S., Mr. Green's friend and pupil. The passages in inverted commas are taken from that source.

(even of mere artistic surface-anatomy) could not be adequately spoken of, much less conveyed, in the six formal lectures which he had annually to deliver. . . . . Not indeed that he omitted to survey, or surveyed otherwise than admirably, the composition and mechanism of the human body; and perhaps no mere anatomist ever taught more effectively than he what are the bodily materials and arrangement which represent the aptitude for strength, equipoise, and grace, or what respective shares are contributed by bone, muscle, and tegument to the various visible phenomena of form and gesture, attitude and action. But to this he did not confine himself. Specially in the one or two introductory or closing lectures of each course, but at times also by digression in other lectures, he set before his hearers that which to them, as artists, was matter of at least equal concern—the science of interpreting human expression and appreciating human beauty. His discourses on these subjects were very deeply considered. Necessarily they were of wide philosophical range. And they were enriched with numberless illustrative references to the history of Art, and to the master-works of ancient and modern sculpture and painting."

On the establishment of King's College in 1830, Mr. Green was nominated Professor of Surgery, and continued to hold the Professorship till 1836, when he resigned it (on retiring to live in the country), and was elected a Member of the Governing Council of the institution. Of his surgical lectures it is stated on the best authority that the technical instruction imparted, perfect as it was, was by no means their sole excellence; they had also a moral aim, and were admirably fitted to exert a favourable influence on the habits of thought and future professional character of his young hearers.

In 1835 Mr. Green was elected on the Council of the College of Surgeons, and in 1846 appointed to the Court of Examiners. In 1840 and 1847 he delivered the Hunterian Oration; in 1849–50 and again in 1858–59 he was President; in 1853 he exchanged his post of Surgeon to St. Thomas's for the honorary appointment (then first made) of Consulting Surgeon to that institution; and on the creation, by the Medical Act of 1858, of the General Council of Medical Education and Registration, he was chosen by the College of Surgeons to be its representative in the new body. Two years later, when the post of President of the Medical Council became vacant by the retirement of Sir Benjamin Brodie, the Council unanimously elected Mr. Green to the office; and he continued in it, with the warmest regard and confidence of its members, for the remaining three years of his life.

Mr. Green thus attained to the foremost rank in his profession, and came to occupy with universal assent its highest public offices; but the contemplation of his professional and public career would convey a wholly inadequate notion of his intrinsic mental tendencies and pursuits, and the scope of his intellectual activity. From his early years he had a bent towards the study of abstract philosophy in its largest and highest sense; and to gratify

this inclination he, in the summer of 1817, found time to spend a few months in Berlin to go through a private course of reading on philosophy with Professor Solger, on whom, as well as on Ludwig Tieck whom he had met in London, his amiable disposition and "noble eagerness for knowledge" made a most favourable impression. Probably about this time also he became acquainted with Coleridge, and contracted an admiration of his philosophy; soon afterwards, at any rate, a close intimacy grew up between them, which continued during the rest of Coleridge's life. "Invariably he spent with Coleridge—they two alone at their work—many hours of every week, in talk of pupil and master. And so year after year, he sat at the feet of his Gamaliel, getting more and more insight of the teacher's beliefs and aspirations, till, in 1834, two events occurred which determined the remaining course of his life. On the one hand, his father died, and he became possessed of amply sufficient means for his profession to be no longer needful to his maintenance. On the other hand, Coleridge himself died. And the language of Coleridge's last will and testament, together no doubt with verbal communications which had passed, imposed on Mr. Green what he accepted as an obligation to devote, so far as necessary, the whole remaining strength and earnestness of his life to the one task of systematizing, developing, and establishing the doctrines of the Coleridgian philosophy."

Influenced by these circumstances he withdrew from private practice and resigned his professorship at King's College. Then, too, he gave up his London house and retired to reside at Hadley; and although he did not relinquish his interest in the practical aspects of his profession or his care for the amendment of its institutions, continuing still to take an active share in the government of the College of Surgeons, and finally presiding in the Medical Council, yet all such occupations and objects then became secondary in his mind to the one object of his philosophical studies and the fulfilment of the task he had undertaken.

With this purpose Mr. Green entered upon the widest possible range of study; for he deemed it necessary to test the applicability of the Coleridgian system to all branches of methodized human knowledge. Accordingly, in the twenty-seven years of life that remained to him, "Theology, Ethics, Politics and Political History, Ethnology, Language, Æsthetics, Psychology, Physics and the Allied Sciences, Biology, Logic, Mathematics, Pathology—all were thoughtfully studied by him in at least their basial principles and metaphysics, and most were elaborately written of as though for the divisions of some vast encyclopædic work."

Mr. Green took advantage of the public discourses which on more than one occasion he was called on to deliver, to make known his opinions on the relation of the Coleridgian philosophy to the study of science and the learned professions. Of these there have appeared in print his Address on the opening of the Medical Session at King's College in 1832, the Hunterian Oration for 1840, entitled "Vital Dynamics," and that for 1847,

with the title "Mental Dynamics." But as years advanced, certain threatening bodily ailments warned him that it was time to utilize in a systematic and communicable form, at least a part of the fruits of his vast preparatory labour; and he accordingly determined to complete a work which should give in system the doctrines, especially the theological and ethical doctrines, which he deemed most distinctively Coleridgian; and to this he devoted what in effect proved to be the whole available remainder of his life. The result is a work in two volumes published under the editorship of Mr. Simon. The first volume is devoted to the general principles of philosophy, while the second is entirely theological, and especially aims at vindicating *à priori* (on principles for which the first volume has contended), the essential doctrines of Christianity.

The mental qualities and character of Mr. Green will be found ably delineated in Mr. Simon's memoir; suffice it here to say that his life, both private and public, was a life of benevolence, probity, truth, and honour.

Mr. Hudson Gurney, who died at the advanced age of ninety-five, was one of the well-known Norfolk family of that name, members of the Society of Friends, and through his wife was connected with the Barclays of Ury. He was for many years a leading Member of the House of Commons, distinguished by the favour he showed to men of letters, and the literary and art collections which he formed. In 1811 he published a poem, 'Cupid and Psyche,' based on the Golden Ass of Apuleius. He was elected a Fellow of the Royal Society in 1818.

Leonard Horner, the third and youngest son of Mr. John Horner, linen-merchant in Edinburgh, was born on the 17th of January, 1785. It was but natural that with an early enthusiasm for science he should have become a geologist; for in Edinburgh at that time Hutton, Hall, Playfair, and a band of zealous followers, by observation in the field and by experiment in the workshop, were gathering materials for a new philosophy of geology, and were waging a keen warfare with the partizans of Werner. The year of Mr. Horner's birth was that in which Hutton's famous excursion to the granite of Glen Tilt was made. He was three years old when that philosopher unfolded his new theory to the Royal Society of Edinburgh, and he had grown up to be a High School boy of ten years of age when the immortal 'Theory of the Earth' was published. At that time, indeed, according to his own confession, he was a thoughtless youth with no special liking for study, and a vague passion for the sea. But these scientific discussions had not come to a close when he grew up to be able to understand and take an interest in them, and their influence is to be traced throughout his life. He entered the University of Edinburgh in 1799, and attended the lectures of Playfair on Mathematics. In 1802 he was studying moral philosophy under Dugald Stewart, and chemistry with Hope; and it was when fairly launched into these studies that his mind took that

bent towards natural science by which it was marked during the rest of his life. "From that time," he writes, "began a new state of mind. I took an interest in the subject, bought apparatus, made experiments, and destroyed many of my mother's towels. I took a particular interest in mineralogy, began to make a collection of specimens, cultivated acquaintence with some fellow students who had the same turn, and read Playfair's 'Illustrations of the Huttonian Theory,' of which I became a worshipper, having heard it well expounded by Dr. Hope." He was too young to have personal intercourse with Hutton, though he tells how he used to hear much in his own family of the "ingenuity, acuteness, and even light-hearted playfulness" of that philosopher. But he became attached to the Professor of Mathematics, to whom sixty years afterwards he referred from the chair of the Geological Society as his "venerable friend the able and eloquent Playfair."

At the age of nineteen Mr. Horner left Edinburgh to become partner in a branch of his father's business, which it was proposed to carry on in London. His elder brother Francis was already rising to eminence in the House of Commons; so that Mr. Horner soon found himself in the midst of a large circle of friends, among whom were not a few of note in science and literature. Two years afterwards he married Miss Lloyd, daughter of a landed proprietor in Yorkshire, and took a house in London. His love for geology, however, was not quenched by the claims of business, for we find him, the year after his marriage, joining the newly-founded Geological Society. Nor did he become an inactive member. In 1810, the second year after his election, he was chosen one of the Secretaries of the Society, and from that time down almost to the very day of his death, he continued one of its most zealous and unwearying members.

In 1815 he found himself under the necessity of returning to Edinburgh to take a personal superintendence of his business there. Two years afterwards his brother Francis, with whom he had journeyed to Italy in a vain search for health, died full of promise. When Mr. Horner had recovered from the blow of this sad loss, his active mind sought new scope for itself in the organization of political meetings, wherein the young Whiggism was developed, for which Edinburgh afterwards came to be so noted. In this, as in many other features of his life, Mr. Horner showed the practical and methodical character of his mind, as well as his social disposition; for these meetings were not arranged without exciting much keen opposition and political feeling. His residence in Edinburgh was marked by the success of another project—one of the most widely useful of all his schemes for the benefit of his fellow-men. In March 1821, happening to observe some watch-makers at work, he was led to inquire whether they ever received any mathematical education. On being told that they did not, and that, though anxious to obtain such instruction, they could not afford to pay for it, the idea occurred to him to found a school for the training of mechanics in those branches of science which would aid them in their daily work. Hence

arose the Edinburgh School of Arts. Mr. Horner laboured hard for the success of this scheme, and he lived to see it completely successful. He acted as Secretary of the School for the first six years; and during all the rest of his life, even though no longer resident in Edinburgh, he continued to take an active interest in the institution and in its prominent students. He several times gave donations of books to the library, and in 1858 invested a sum of money for an annual prize of three guineas. The usefulness of this school has been great. About seven hundred young men are entered annually as students in mathematics, chemistry, or natural philosophy, and receive at small cost instruction which would otherwise lie beyond their reach. Several of the foremost engineers of the present day have been students there. It was in remembrance of this and similar kinds of philanthropic activity, that Lord Cockburn styled Mr. Horner "one of the most useful citizens Edinburgh ever possessed."

Mr. Horner left Edinburgh in the year 1827 to assume the office of Warden in the University of London, a post at which he laboured for four years, until his failing health led him to seek a retreat with his family on the banks of the Rhine. At Bonn he had leisure to renew his old love for mineralogical and physical geology; and in making himself acquainted with the geological structure of the district, he at the same time formed a life-long friendship with some of the most eminent men of science and learning there. On his return to England in 1833 he was appointed one of a Commission to inquire into the employment of children in the factories of Great Britain. The Report of this Commission gave rise to the Factory Act, under which Mr. Horner was made one of the Inspectors of Factories, an office which, through good and ill report, he laboriously and conscientiously filled for nearly thirty years. His zeal for the interests of the women and children in the factories often placed him in conditions of great delicacy, yet, notwithstanding opposition and disparagement, he continued his exertions, and earned the gratitude of the workers, while he was at the same time rewarded by finding an ever-increasing number of millowners who acknowledged the benefits of the Act which it was his duty to enforce.

During these busy years, however, he never lost or relinquished his interest in the progress of science, and more especially of Geology. No face was more constantly seen at the Meetings of the Royal and Geological Societies than that of Mr. Horner. He had become a Fellow of the Royal Society in 1813, and in various years served on the Council. In 1845 he took an active part in the reform of the Society, whereby the mode of Election of new Members was modified. In the year 1857 he was nominated Vice-President. In the Geological Society he took a still more prominent part. Besides reading papers at its Meetings, he became in 1846 its President, an office which he again filled in 1860. He was unremitting in his attention to all that might in any way further the interests or usefulness of the Society. He worked with his own hands in the Museum, arranging and cataloguing its stores of specimens; and he

carried on this task at intervals up to within a short period of his death, labouring often to the verge of his physical strength. To his suggestion is due the publication of the Quarterly Journal of Papers read at the Society's Meetings, one of the most important undertakings of this Society.

When Mr. Horner at last resigned the office of Inspector of Factories, although now seventy-five years of age, he still remained so full of youthful energy, that he looked forward hopefully to spend yet a few years in more undivided attention to his favourite science. Unable longer for the toils of out-of-door geology, he resumed with fresh zeal the arrangement of the Geological Society's Museum, anxious that its stores of rock-specimens should be classified in such a form as in the end to afford a comparative series of the different rocks throughout the globe. The failing health of his wife interrupted this task, and induced him to spend the winter of 1861–62 at Florence. There, as at Bonn, he found a ready welcome into the cultivated and learned society of that city. While there, he occupied himself with translating from the Italian Villari's 'Life of Savonarola,' and published it in England a few months afterwards. Mrs. Horner's health, however, which had continued a source of anxiety to him, at last gave way, and she died as the family was on the point of returning to England. When Mr Horner came back to London, his friends saw with concern that this great sorrow had told only too plainly upon his health. His strength began to fail, but his energy seemed as fresh as ever. He returned to his labours among the collections of the Geological Society, and day after day he was found poring over dusty specimens, describing and cataloguing them with the same perseverance and even enthusiasm which he had shown from the beginning. A few months after his return from Italy, viz. during the summer of 1862, he paid his last visit to his native city. Never was his welcome warmer. He came at the time when the schools were passing through their public examination previous to dismissal for the autumn holydays—the High School where he himself had been educated, and the Academy which, with Lord Cockburn, he had founded. He attended the examinations, addressed the boys, presented some of the prizes, and showed at the end of his long life the same deep interest in education and in the pursuits of youth. His old Edinburgh friends, too—now a yearly decreasing number—vied with each other in their attention to the venerable philanthropist.

Returning from Scotland to London, he fixed upon the 15th of March, 1864, as the day when he should leave England to revisit the grave of his wife at Florence. But before that day came round a cold seized him, followed by extreme weakness, and he died calmly on the 5th of March.

Physical geology was the branch of science to which Mr. Horner more specially devoted himself. The influence of his early acquaintance with Playfair and the Huttonian geologists at Edinburgh is visible throughout his scientific course. He began the study imbued with the prevailing

ideas regarding the importance of mineralogical geology; and his first papers—that on the Malvern Hills, and that on Somersetshire—may be taken as characteristic specimens of the mineralogical system of treatment by which the geology of the early part of this century was marked. But though from the state of the science at that time (1811–1815) it was not to be expected that he should succeed in unravelling the complicated geological relations of the different rocks, it is yet interesting to mark how he carried with him the spirit of careful observation in which Playfair had trained him, and how readily he saw among the hills of England proofs of the truth of the Huttonian system. During his active life he had few opportunities of doing much in field-geology. When he found a little leisure in his retreat at Bonn, he at once reverted to his favourite science, and the results of his sojourn were given to the Geological Society in a paper on the Geology of the Environs of that town. During the same interval of rest he was led, in the true spirit of the Huttonian school, to institute a series of experiments on the quantity of solid matter suspended in the water of the Rhine, with the view of arriving at some "measure of the amount of abraded stone transported to the sea, there to constitute the materials of new strata now in progress of formation." These researches have become classic in the history of geology. Fifteen years later a similar kind of inquiry greatly interested him when Lepsius called attention to certain sculptured marks in the valley of the Nile; and in 1851 he obtained from the Royal Society a grant of money for the purpose of excavations to be made in the Nile alluvium. To link together the earliest human with the latest geological history seemed to him an object worthy of earnest prosecution. After four years of exploration, carried on according to a plan drawn up and sent out by him to Egypt, Mr. Horner published the results of his researches in the 'Philosophical Transactions' for 1855. His presidential addresses to the Geological Society were devoted to a survey of the progress of geology. They are remarkable for the sympathy which they show for views far in advance of those in which he had himself been trained.

But it is not by the number or character of his writings that Mr. Horner's influence among the scientific men of his day is to be estimated. His age and experience, his association with the early days of British geology, his political connexions, his sound judgment and careful business habits, joined to his excellent social qualities, gave him a position which none can now fill. And he retained his influence in no small measure from the singular fervour and youthfulness of his mind. Instead of clinging to old methods and beliefs as one of his years and early predilections might have been expected to do, he was found ever ready to receive and sympathize with new developments of truth, and to uphold the cause of progress in all departments of science. Even at the last, when he read his final address to the Geological Society, he pleaded boldly for the high antiquity of the human race in opposition to popular prejudice on this subject, and

claimed for the speculations of Mr. Darwin the thoughtful consideration of all lovers of truth. Mr. Horner's death severed a link closely and visibly connecting the geologists of today with the early masters of the science in this country, and closed a long and honourable life, full of all kindliness, and ever devoted to the welfare of his fellow men.

Luke Howard was born in London in 1772, a date which carries us back to the early years of the reign of George III., and opens a long vista of history in which great political changes are rivalled by the grandest discoveries of modern science.

Luke Howard's parents, members of the Society of Friends, sent their son to a country school in North Oxfordshire, where, as he was accustomed to say in after life, "he learnt too much of Latin grammar and too little of anything else." But having even then an observing eye, he began to notice the appearances of the sky and forms of clouds; and his inclination towards meteorology appears to have been fixed by his impressions of the remarkable atmospheric and meteoric phenomena which, as those acquainted with the history of meteorology will remember, characterized the year 1783.

From school young Howard went as apprentice to a chemist at Stockport, which was then a quiet country town. In this situation he devoted his spare hours to the course of self-improvement which he had already begun, and acquired that knowledge of French, botany, and the principles of chemistry, which were so useful to him in after years. The quickening effect produced on his mind by the works of Lavoisier he described as "like sunrise after morning moonlight," an effect which has been felt by many a student.

In 1798 he entered into partnership with William Allen, whose reputation as a manufacturing chemist has long been recognized. This connexion, however, was brought to an amicable close a few years later, and Howard, taking as his portion the laboratory at Plaistow, applied himself to the business therewith connected, and to his favourite scientific pursuits. Making use of his observations of natural phenomena, he wrote a paper "On the Modifications of Clouds," and read it at a meeting of the Askesian Society, of which he and his friend Allen were members. This paper, as he himself tells us, "the result of his early boyish musings, enriched by the observations of many a walk or ride, morning and evening, to or from his day's work at the laboratory," was published in 1803, and made known the author's name and ability to a wider circle. The Askesian was not a publishing Society; otherwise Luke Howard might have been better known than he is as a pioneer in departments of science besides meteorology. "I know," writes one of his friends, "that one or more of his papers related to atmospheric electricity, and another was an anticipation of the cell-theory, as regards the structure and functions of plants, founded on microscopic investigations."

Many, if not all, the articles on meteorology in 'Rees's Cyclopædia,' were written by Luke Howard. He contributed a series of papers to the 'Athenæum,' embodying the results of his meteorological observations from the year 1806; and these he published in two volumes (1818–20), under the title "Climate of London, deduced from Meteorological Observations made in the Neighbourhood." This, republished in 1833, in three volumes, has become one of our standard works on meteorology.

Luke Howard was elected a Fellow of the Royal Society in 1821. From that time his reputation as a meteorologist increased, and eminent persons in many parts of the world opened a correspondence with him, which, in some instances, became the initiation of a lasting friendship. Although the increasing perfection of philosophical apparatus has superseded some of his methods of observation, there can be no doubt that his labours imparted more of a scientific character to meteorology than it had ever received before. His classification of the clouds is the one still recognized at all observatories, and remains an evidence of the quick eye he had for form and colour, and of the daily labour which was to him a labour of love. One who knew him well in the latter part of his life, says, "Those who lived with him will not soon forget his interest in the appearance of the sky. Whether at morning, noon, or night, he would go out to look around on the heavens, and notice the changes going on. His intelligent remarks and pictorial descriptions gave a character to the scene never before realized by some. A beautiful sunset was a real and intense delight to him; he would stand at the window, change his position, go out of doors, and watch it to the last lingering ray; and long after he ceased, from failing memory, to name the 'cirrus,' or 'cumulus,' he would derive a mental feast from the gaze, and seem to recognize old friends in their outlines."

Sharing in the active beneficence so characteristic of the Society of Friends, Luke Howard readily aided endeavours for the religious and moral as well as the material welfare of the community. Not least important among these was the seeking to mitigate by pecuniary means the sufferings of the Germans during the campaigns immediately preceding the first abdication of Napoleon. In Ackworth School—a well-known establishment of the Friends—he took a lively interest; and to participate the more directly therein, as well as to offer hospitality to the annual visitors to the school, he bought the Ackworth Villa estate in 1823, making it his summer residence, and Tottenham his winter residence, during the greater part of his life.

In 1796 Luke Howard married Mariabella Eliot, a member of the same Society with which he was himself connected. Of their family of seven children two sons only survived their parents. About his eightieth year he was much enfeebled by alarming attacks of illness; and the death of his wife following, after a union of fifty-six years, added sorrow to his

weakness. Henceforward his life was a subdued waiting for the end. He died at Tottenham on the 21st March, 1864.

A portrait of Luke Howard, bequeathed to one of his friends, is eventually to be added to the Royal Society's collection. Besides the works above mentioned, he published—Essay on the Modifications of Clouds, 1832; Seven Lectures on Meteorology, 1837; a Cycle of Eighteen Years in the Seasons of Britain, &c., 1842; Barometrographia—Twenty Years' Variation of the Barometer in the Climate of Britain, 1847; Papers on Meteorology, 1850–54; and The Yorkshireman, a religious and literary Periodical, in 5 vols., 1833–37.

William Chadwell Mylne was born in London, on the 6th of April, 1781, and died on the 25th of December, 1863. His father, Robert Mylne, F.R.S., a native of Edinburgh, and the representative of a long line of Scotch architects, commenced his career in London in 1759 by building Blackfriars Bridge, and held the appointment of Engineer to the New River Water Works, to which his son, the subject of this notice, succeeded in 1810.

Mr. Mylne may be said to have been from his cradle bred an engineer. When a boy only sixteen years of age he was engaged with the younger Mr. Golborne in the Fen country in staking out the lands for his father's great scheme of the Eau Brink Cut, an undertaking which, through opposing interests, was defeated at that time, but was eventually carried out by Mr. Rennie in 1817. Subsequently he was occupied on his father's well-known project, the Gloucester and Berkeley Ship Canal, seventy feet in width; and he was generally engaged in assisting his father in the largest professional practice of that day.

Succeeding at thirty years of age to the sole conduct of the New River Works, Mr. Mylne had before him an arduous and responsible office. The supply of water to London had hitherto been solely derived from the New River and London Bridge Works; but the rapid extension of the metropolis led to the establishment of new companies, which gave rise to serious contests, and for some years involved them in a ruinous competition. Mr. Mylne's ability and energy were soon tried in carrying out extensive changes in the New River Works. The old wooden main pipes, which up to 1810 were the principal conduits for the passage of water, were found insufficient to stand the requisite pressure, and it was deemed expedient to substitute pipes of cast iron. This improvement was effected at a cost of nearly half a million sterling; and the whole was satisfactorily accomplished under Mr. Mylne's judicious management.

Notwithstanding the constant and unremitting engagements of the New River business, Mr. Mylne was occupied in considerable engineering practice, particularly in the Fen country, carrying out Sandys Cut, with several other important drainage works. Combining also the hereditary profession of an Architect, he was engaged in bridge-building, and in the alte-

rations and extensions of many private mansions. Among his works, the single-arched iron bridge over the River Cam, at St. John's College, Cambridge, has been much admired; and the church of St. Mark's, Clerkenwell, met with considerable approval at the period of its erection, forty years since.

Mr. Mylne in later years was much occupied in Government references, and acted as surveyor for fifty years to the Stationers' Company, having succeeded his father in that office. He was also extensively engaged before Parliamentary Committees on Water, Dock, and Drainage Works, and was consulted in continental works of similar character.

From the date of his entering on the direction of the New River Works to his retirement, two years before his death—a period of fifty years—he had the satisfaction to witness a very great advance in the income of the Company, and a great extension of their works, consequent on the increased demand caused by the further growth of the metropolis and awakened attention to its salubrity. In 1852 new works were undertaken to the extent of three quarters of a million sterling, and executed by him, with the assistance of his son, R. W. Mylne, F.R.S.

Mr. Mylne was a man of a peculiarly kind and conciliatory disposition, a peace-maker in all professional strife, of strict integrity and high honourable feeling. He was for many years the guiding hand, as Treasurer, to the Society of Engineers styled "Smeatonians," in which, as in all other Associations, he won the respect, esteem, and almost affection of those with whom he was connected. His retiring disposition caused him seldom to take part in scientific discussions; but he took a keen interest in all questions of progress, and during his long career judiciously availed himself of the opportunities offered him of adopting the new inventions of the age.

Mr. Mylne was elected a Fellow of the Royal Society on the 16th of March, 1826.

Major-General Joseph Ellison Portlock, son of Captain Nathaniel Portlock, a distinguished officer of the Royal Navy, was born at Gosport in September 1794. He received his early education at a school in his native town and at Tiverton, from which he went to the Royal Military Academy at Woolwich. In 1813 he took his first commission in the Royal Engineers, and was sent in the following year to Canada, where he remained actively employed in military service or exploring expeditions until 1822. He was present at the siege of Fort Erie; and, on the retirement of the troops, he constructed the lines and bridge-head at Chippewa, at which Sir Gordon Drummond made his successful stand, and saved Upper Canada.

In 1824, on the extension of the Ordnance Survey to Ireland, Lieut. Portlock was one of the officers first selected by Colonel Colby to take part in the work; and his earliest duty in connexion therewith, conjointly with Lieuts. Drummond and Larcom, lay in working out the preliminaries of

what has since grown into first-rate importance as the Topographical Department. The task at that time was beset by difficulties, which the progress of physical and mechanical science has since removed: the preparation of the base-apparatus, the construction of astronomical and other surveying-instruments, the contriving of signals by lamp and heliostat, and the training of sappers for their special duties had to be undertaken under the disadvantage of newness. But at that time the Duke of Wellington was Master-General of the Ordnance; and supported by him, Colonel Colby carried out his plans in full efficiency.

In 1825 the first detachments were removed to Ireland, and the first trigonometrical station was taken up on Divis Mountain, near Belfast. There the first signals and observations with lamp and heliostat were attempted, and, to the satisfaction of the originators, proved completely successful. This was Lieut. Portlock's start on the trigonometrical branch of the survey, of which he shortly became the senior, and eventually sole officer.

In addition to scientific skill and accuracy, great personal endurance was required in carrying on the observations. In 1826 the camp on Slieve Donard, 2800 feet above the sea, was more than once blown down by the violence of the wind. Colonel Colby was seriously injured by a fall while climbing from the observatory to his tent; and communication with the country below involved both difficulty and danger. Yet "Portlock," we are told, "held out to the last. For some weeks he was the only officer remaining; but he struggled on, and brought the operations to a successful close."

In the following year, while Colonel Colby was measuring the base on the shore of Lough Foyle, Lieut. Portlock, with Lieut. Larcom, carried out the observations at seven hill-stations, regardless of season and weather. In 1828, and for some years afterwards, he performed the work single-handed, observing with the great theodolite from mountain after mountain till the principal network of triangulation was complete, and the Irish system was, by means of the lamp and heliostat signals, united to that of Britain. In addition, care had to be taken for the direction of the secondary triangulation for the details of the survey, and for the rectification of errors and the discrepancies that were sure to occur at the junction of the separate districts. For this the whole had to be combined under one general system; and this additional labour Lieut. Portlock undertook while still on the mountains. He carried it on afterwards at his office in Dublin; and so well did he direct these secondary operations, that, after the parties became used to the work, the surveying went on at the rate of three million acres a year.

The horizontal survey involved the necessity of an elaborate vertical survey and calculations for altitude. The altitudes were deduced at first from the sea, by actual levelling from it to bases of altitude, and from them transferred, by angles of elevation and depression, to the summit of every

hill and station, at distances averaging a mile asunder; and on this the minor levelling of the detail survey depended. This also was ultimately generalized into a system by Lieut. Portlock, and by him furnished regularly and rapidly. In fulfilling this purpose, he personally carried a line of levelling across the island from the coast of Down to the coast of Donegal, and caused several lines to be observed in other places. In this way a more general and homogeneous system of altitudes was obtained than had ever before been attempted. It supplied the data for the paper on Tides by the Astronomer Royal, published in the 'Philosophical Transactions.'

In all this we see a character conspicuous alike for ability and energetic perseverance; but among its other elements, there was one which may be properly noticed here—the praiseworthy example he set to the men under his command. They felt that with him they were in the hands of something superior to themselves in intellect and acquirements, and they improved in a marked degree in the duties of the survey, in intelligence, and the habit of obedience. "They needed only encouragement, no coercion, and they rapidly acquired knowledge; to all of which I can testify," writes one of Portlock's brother officers; "and I am sure it is the experience of the whole corps, more perhaps than any other in the army, that when officers study the characters of their men, and use in governing them the knowledge so acquired, they are amply rewarded by the result, and need no coarser discipline." Sergeant Manning, who worked under Lieut. Portlock through the whole period of his service on the Irish survey, was chosen as the non-commissioned officer best fitted to take charge of a party sent in 1848 to the Cape of Good Hope, to verify, under direction of Mr. (now Sir Thomas) Maclear, the base measured by Lacaille nearly a century before.

Of the great value of the Irish survey in connexion with the geology, archæology, statistics, and industrial resources of Ireland, this is not the place to speak. Suffice it to say that when the time came for drawing up a Report on the subject, Lieut. Portlock proved himself not less able as a geological than as a geodetical observer. His separate Report on the Geology of Londonderry has been pronounced by high authority to be "a perfect model for fidelity of observation and minute attention to phenomena." It is safe to affirm that the name of Portlock will ever be most honourably associated with the history of the Ordnance Survey of Ireland.

In 1843 Captain Portlock was ordered to Corfu on the ordinary duties of his corps. In the comparative leisure which he then enjoyed he wrote papers on the geology and natural history of the island, and on professional subjects. Some of these were published in the Reports of the British Association, the Annals of Natural History, and Journal of the Geological Society. The Association voted him a grant "for the Exploration of the Marine Zoology of Corfu," the results of which he embodied in two papers subsequently published. In these again we have evidence of his activity of mind and accuracy of observation.

Recalled to England in 1847, Major Portlock was stationed first at Portsmouth, and afterwards, as Lieut.-Colonel, at Cork. From this time the literature of his profession and scientific study engaged much of his attention. The annual volumes published by the British Association contain papers from his pen; and besides contributions to the *Professional Papers* of the corps, he wrote the articles "Geology and Geodesy," "Galvanism," "Heat," "Palæontology," and an Appendix on Gun-Cotton for the *Aide-mémoire*, and the Treatise on Geology in Weale's Rudimentary Series. Others of his papers appear in the Journal of the Geological Society of Dublin, of which Society he was four times President.

In 1851 Lieut.-Col. Portlock was appointed Inspector of Studies at the Royal Military Academy, Woolwich, in which place he helped forward measures for improving the scientific character of the system of education, and increasing its efficiency generally; and during this period he wrote the articles "Cannon," "Fort," "Gunnery," and revised the article "War" for the 8th edition of the 'Encyclopædia Britannica,' besides translating for the new series of *Professional Papers* a work on Gunpowder (from the French), and a treatise on Strategy (from the Italian). He wrote also a memoir of his former chief, Major-General Colby, a publication honourable alike to the subject and the author. To all this must be added the two Addresses delivered by him as President of the Geological Society in 1857 and 1858, which, in the words of an eminent authority, are characterized by "faithful and elaborate research."

After resigning his appointment at Woolwich, and holding the command for a few months at Dover, Major-General Portlock became in 1857 a Member of the Council of Military Education, in whose proceedings, as might have been expected, he took an active and earnest part. His sentiments with regard to the objects in view may be gathered from a memorandum drawn up by one of his colleagues, who writes, "General Portlock's opinions on the questions presented to him as a Member of the Council were in all cases those of the most forward advocates of education. He looked upon competition as the great principle upon which public appointments should be made, nor did he shrink from the inevitable social results which such a change would involve. Education, combined with good morals, he regarded as constituting a paramount claim to the rank of gentleman. He was therefore a warm advocate of the system of open competition as applied to the elections into the Royal Military Academy of Woolwich; nor did he share the apprehension, which has been very frequently expressed, of a consequent lowering of the social position of the officers of the two great scientific corps.

The weakness and infirmities of advancing years were borne by General Portlock with a spirit not less calm and patient than that which animated him through the hardships of the Ordnance Survey. He retired to Lota, a pleasant spot near Dublin, and there died on the 14th February, 1864. He was elected a Fellow of the Royal Society in June 1837, and was a member of other metropolitan and provincial Societies. The honorary

degree of Doctor of Laws was conferred on him by Trinity College, Dublin, in 1857."

This brief notice of one who was for twenty-seven years an honour to the Society, may be fittingly closed with a few words of affectionate testimony by a brother officer, to whose Memoir we are indebted for much of the foregoing. "The characteristics which shone forth in Portlock during his well-spent life," writes Major-General Sir Thomas Larcom, "whether as a soldier, a geographer, or a geologist, were—undaunted courage in facing difficulties, Spartan endurance and invincible perseverance in overcoming them. Endowed, when in the zenith of his career, with a frame and nerves of iron, he exhibited such a vast power of continuous labour, that he achieved every object he had in view; while great ability, and a pure love of knowledge, were in him guided and governed by the highest sense of honour and moral rectitude."

Dr. Archibald Robertson was born at Cockburnspath in Scotland, on the 3rd of December, 1789. He studied medicine at Edinburgh, and in 1808 entered the Naval Medical Service. After some years of active employment in Europe and America, he on the termination of the war resorted again to Edinburgh for the further prosecution of study, and took his degree of M.D. in that University in 1817. He then settled as a physician in Northampton; and although for more than a twelvemonth he did not receive the encouragement of a single fee, he held on to the position he had taken, and was soon rewarded by large and lucrative employment, his success being promoted and assured by his being in 1820 elected Physician to the Northampton Infirmary. After a long and prosperous professional career, and the acquisition of a handsome independence honourably earned, he in 1853 resolved to withdraw himself from the labour of active practice. He accordingly left Northampton, and passed the rest of his life in retirement in the west of England.

Dr. Robertson was a man of considerable literary accomplishment, and, before his time became engrossed by practice, he was in the habit of writing literary articles in some of the journals and reviews of the day. He contributed two short articles on professional subjects to Forbes's 'Cyclopædia of Medicine.' He was elected a Fellow of the Royal Society on the 11th of February, 1836.

Both as a physician and as a member of society, Dr. Robertson was highly esteemed. His death took place at Clifton, on the 19th of October, 1864.

Giovanni Antonio Amedeo Plana, descended from an ancient and distinguished family of Guarene in Piedmont, was born at Voghera, on the 8th of November, 1781. In 1800 he entered the Polytechnic School of Paris, where he so greatly distinguished himself that, on the 23rd of May, 1803, he was appointed Professor in the Artillery School of Alessandria.

On the 28th of November, 1809, he presented to the Academy of Turin a paper, entitled "Équation de la courbe formée par une lame élastique quelles que soient les forces qui agissent sur la lame," the first of a series of papers offered to the same Academy, far too numerous to be recorded in the present notice. On the 15th of March, 1811, on the recommendation of Lagrange, he obtained the Professorship of Astronomy in the University of Turin, and on the 5th of March, 1813, became Director of the Observatory. After the Restoration, the king, Victor Emmanuel I., who took a personal interest in the progress of astronomy and frequently sent for Plana to explain various celestial phenomena, augmented the income of the Observatory, and transferred it from the house of the Academy to a better situation on the west tower of the north face of the Palazzo Madama. During the years 1821, 1822, 1823 he was associated with Carlini in the operation of measuring an arc of parallel in Savoy and Piedmont. The results were published in 1825, under the title "Observations géodésiques et astronomiques pour la mesure d'un arc de parallèle moyen." In 1828 the authors received from the Institute the Lalande prize for the astronomical part of their joint work. In 1832 he published his 'Théorie du mouvement de la Lune,' in three large quarto volumes. This he regarded as the most important of all the labours of his life. For this work the Copley Medal was awarded to him in 1834, and the Gold Medal of the Astronomical Society in 1840. In announcing the latter award, Sir John Herschel, President of the Society, made the following quotation from the "Discours préliminaire" of the 'Théorie de la Lune'—"Je n'ai pu me faire aider par personne; j'ai dû traverser *seul* cette longue chaîne des calculs, et il n'est pas étonnant si, par inadvertence, j'ai omis quelques termes qu'il fallait introduire pour me conformer à la rigueur de mes propres principes,"—adding, "When we look at the work itself there seems something awful in this announcement."

In 1822, on the occasion of the appearance of his "Mémoire sur les mouvements des fluides qui recouvrent une sphéroïde à peu près sphérique," he was elected a Corresponding Member of the Institute, and in 1860 one of the eight Foreign Associates. In December 1851 he became President of the Royal Academy of Turin. He was elected Foreign Member of the Royal Society in 1827. He received from his own king the title of Baron, and was created a Senator on the formation of the Senate in 1848.

He delighted in the classic poets, and was not more remarkable for the accuracy and elegance of his mathematical investigations than for the precision of his style in writing. He was in the habit, it is said, of bestowing extraordinary care on the composition and correction of his works.

On the 6th of January, 1864, he read a paper before the Royal Academy of Turin, entitled "Mémoire sur les formules du mouvement circulaire, et du mouvement elliptique libre autour d'un point excentrique par l'action d'une force centrale." This was his last work. He died at Turin on the 20th of January, 1864, leaving a widow (Lagrange's niece) and a daughter.

The death of his only son, on the 27th of March, 1832, called forth the expression of grief which concludes the Introduction to the 'Théorie de la Lune.'

Heinrich Rose was born on the 6th of August, 1795, at Berlin, where his father, son of the discoverer of the fusible alloy known by his name, was Pharmacist and Assessor of the Superior Medical College. His father died in 1807, leaving behind him a widow and four young boys. H. Rose studied Pharmacy first in Dantzic, where he experienced the horrors of a siege, and nearly lost his life by typhus fever. He served in the campaign of 1815, together with his three brothers, of whom one is Professor Gustav Rose, the distinguished Mineralogist of Berlin. On the conclusion of the war he continued his studies in Berlin, working in Klaproth's laboratory during the summer of 1816. In September 1816 he entered the Pharmacy of Dr. Bidder of Mitau. About the end of 1819 he went to Stockholm, where he worked for a year and a half in the laboratory of Berzelius, who recommended him to devote himself to the teaching of chemistry as a profession. On quitting Stockholm he resided for some time at Kiel, where he wrote his Dissertation "de Titanio ejusque connubio cum oxygenio et sulphure," and took the Degree of Doctor of Philosophy. In the summer of 1822 he obtained the sanction to become a private teacher in the University of Berlin, and began a course of lectures on practical analytical chemistry in the autumn of the same year. He was appointed Extraordinary Professor in 1823, and Ordinary Professor of Chemistry in 1835. He was elected a Member of the Berlin Academy in 1832, Foreign Member of the Royal Society in 1842, Corresponding Member of the Institute in 1843, and was invested with the Prussian order of *pour le mérite*.

His memoirs on inorganic chemistry and chemical analysis, a department in which he stood unrivalled, to the number of nearly, if not quite, two hundred, are contained principally in Gilbert's and Poggendorff's 'Annalen.' The results of his researches in analytical chemistry are embodied in his 'Handbuch der analytischen Chemie,' which came out in one volume in 1829. A second edition, in two volumes, was published in 1831, a fourth in 1838, a fifth in 1850, the sixth (so thoroughly revised that it should be regarded as a new work) was published in French, at Paris, in 1861. In forming an estimate of the labour expended in preparing this voluminous treatise, it must be remembered that each precept is the result of an experiment (frequently of a series of experiments) made by the author. During the last years of his life he was engaged in writing an elementary treatise on analytical chemistry, about thirty sheets of which were printed during his lifetime. For this work also a large number of experiments were made in his laboratory. His activity and industry increased with advancing age. A year before his death he was heard to exclaim, "I have at most only a few years to live, and so much remains to be done!" During the latter

part of his life his only recreation was a long walk taken late in the evening, in all weathers, throughout the year. He was the first person in all Germany who established a class of working pupils. He received them in his private laboratory without fee, providing at his own cost most of the apparatus and all the reagents they required.

He was spared the pain of feeling the approach of bodily and mental infirmity. He lectured in full possession of all his faculties only eight days before his death, and he was confined to his bed only seven days. On the 27th of January, 1864, he asked for writing-materials to correct some proof sheets, saying that he felt well, and that he could now leave his bed. That afternoon he died, of inflammation of the lungs. He left behind him a widow, his third wife, and a grandchild, the daughter of Professor Karsten. Her mother, H. Rose's only child, died some years since.

Friedrich Georg Wilhelm Struve was born at Altona on the 15th of April, 1793. He was the fourth son of Dr. Jacob Struve, Director of the High School of Altona. His mother was the daughter of Pastor Stinde, Chaplain to Peter III., Emperor of Russia. In order to avoid the French conscription, he went in 1808 to the University of Dorpat, where his elder brother Carl was a Classical Lecturer. At first he devoted himself to Philology, a study in which he delighted to the end of his life. He supported himself partly by private tuition in the family of M. de Berg, and partly on some pecuniary assistance afforded him by the University on the recommendation of the elder Parrot, who had discovered Struve's promise of future eminence. In 1811, after taking his first degree in Philology, he commenced the study of Astronomy under Huth, who permitted him the free use of the few instruments contained in the Observatory at that time; and in August of that year he verified by observation the conclusions of Sir William Herschel respecting the angular motion of the two stars composing Cas or. In the autumn of 1813 he took the degree of Doctor of Philosophy, the title of his thesis on that occasion being "De geographicâ speculæ Dorpatensis positione." In November 1813 he was appointed Extraordinary Professor of Mathematics and Astronomy, and, after the death of Huth, Ordinary Professor, and Director of the Observatory. During the years 1816–19 he surveyed and mapped Livonia at the request of the Economical Society of that Province, the only instrument employed by him in the survey being a 10-inch sextant by Troughton.

In 1821 the Observatory of Dorpat was supplied with a meridian-circle by Reichenbach and Ertel, and in 1824 with an equatorially mounted refractor, of 9 Paris inches aperture and 160 Paris inches focal length, by Fraunhofer. The principal results of the observations made by Struve at Dorpat during the years 1814–1838 are given in the works entitled "Observationes astronomicæ institutæ in speculâ Dorpatensi, 1817–1839," "Catalogus 795 stellarum duplicium, 1822," "Catalogus novus stellarum duplicium et multiplicium, 1827" [in the introduction to this

work it is incidentally noticed that on one occasion he had observed uninterruptedly for eight hours in a temperature of −25° C.], "Stellarum duplicium et multiplicium mensuræ micrometricæ, 1837," "Stellarum fixarum imprimis compositarum positiones mediæ, deductæ observationibus meridianis a 1822 ad 1843 in speculâ Dorpatensi, 1852," "Beobachtungen des Halley'schen Cometen bei seinem Erscheinen im Jahre 1835, auf der Dorpater Sternwarte angestellt, 1839."

In the spring of 1839 he left Dorpat to assume the Directorship of the Observatory of Pulkowa, built in accordance with his own plans, and furnished with instruments contrived and executed under his own directions. An account of the building and instruments is given in his "Description de l'Observatoire central de Pulkowa, 1845." In 1843 he published his "Catalogue de 514 étoiles doubles et multiples, &c., et Catalogue de 256 étoiles doubles principales où la distance des composantes est de 32″ à 2′ &c.," and "Sur le coefficient constant dans l'aberration des étoiles fixes déduit des observations qui ont été exécutées à l'observatoire de Poulkova." In 1847 he published "Etudes d'Astronomie stellaire."

Struve devoted a portion of the summer for many years to the vast undertaking of measuring an arc of the meridian of 25° 20′ from Fuglenaes on the Arctic Ocean, lat. 70° 40′, to Ismail on the Danube, lat. 45° 20′. This work may be considered the principal labour of his life: he was assisted in it by General Tenner and the astronomers Selander and Hansteen. It lasted thirty-seven years, and was completed in 1853. An account of the measurement is given by Struve in "Breitengradmessung in den Ostseeprovinzen Russlands ausgeführt und bearbeitet in den Jahren 1821 bis 1831," in "Exposé historique des travaux exécutés jusqu'à la fin de l'année 1851, pour la mesure de l'arc du méridien, &c., 1860," and in "Arc du méridien de 25° 20′ entre le Danube et la mer Glaciale, 1860."

Besides the works already mentioned, he is the author of many separate treatises, and of papers in Bode's 'Jahrbuch,' the 'Zeitschrift' of von Lindenau and Bohnenberger, von Zach's 'Correspondance Astronomique,' and the 'Bulletins' and 'Mémoires' of the Imperial Academy of St. Petersburg.

In 1858 he was attacked by a severe illness, for which rest from work and travelling were prescribed. These remedies, however, failed to remove the consequences of his malady. In 1862 he retired from the post of Director of the Pulkowa Observatory, and was succeeded by his son O. W. Struve. He then went to live with his family in St. Petersburg, occupying the remainder of his life with the subject of double stars. On the 4th of November he felt indisposed; his strength failed rapidly; and he died on the morning of November the 23rd, 1864.

He was elected Foreign Member of the Royal Society in 1827, and in the same year one of the Royal Medals was awarded to him for his 'Catalogus novus Stellarum duplicium.' He received the Gold Medal of the Royal Astronomical Society in 1826, "for his important researches on the

subject of multiple stars." His name appears in the list of Associates in the first volume of the 'Memoirs of the Astronomical Society.' In 1833 he was elected Corresponding Member of the Institute.

Struve married twice; he had twelve children by his first wife, of whom eight survive, and eight by his second wife, now his widow, of whom four survive.

Much of the present notice has been derived from a very comprehensive sketch of Struve's life and labours in the Proceedings of the Astronomical Society, by the Rev. C. Pritchard.